ing and thickness of the clouds, and the slope of the lapse rate in the inversion layer. For any given surface temperature, T_c varies directly with (1) the thickness of the clouds and (2) the steepness of the slope of the lapse rate curve in the inversion layer, as can be seen from figure 5. However, without accurate information no attempt should be made to use this method. It should be pointed out also that the application of this method assumes that the specific humidity remains fairly constant during the clearing process.

This information may often be had from scheduled airline pilots, a very satisfactory source. Also nearby mountain stations can give this information, though in general, due to the fact that the elevation of the top of the clouds has to be estimated, the results therefrom are not always reliable. For example, an error of 500 feet in estimating the elevation of the top of the clouds will give a very unsatisfactory value for T_c. It is also often difficult to get an accurate concept of the lapse rate in the inversion layer; for the mountain station may be above the inversion layer, in which case this method cannot be used unless temperature readings are available from some other stations at an intermediate elevation. Also, early morning temperatures from such stations are invariably lower than the free air temperature of the same level. It has been found that early evening temperatures from such stations in the vicinity of Burbank, correspond well with the temperature at the same level on the airplane flight of the following morning from North Island.

Experience has further shown that this method may not be reliable when a ragged or variable ceiling prevails. Under such circumstances the thickness of the clouds cannot accurately be evaluated. Any other factor, such as a changing synoptic situation, which influences the thickness of the clouds will also make this method invalid, for T_c would then be a variable. The use of the surface temperature as as basis for computing T_c is apt to be unreliable in the case of comparatively high ceilings, especially if the clouds did not form until well after midnight. In such cases, temperature data should be available from the top or base of the cloud layer in order to compute T_c.

Some results are presented in table 1. It was decided to use for this purpose the results obtained during May and June of 1938, a period when daily morning radiometeorograph observations were made at Burbank, and hence a period during which no doubt can exist as to the reliability of the source of the data. Under the heading, T_c, is the indicated time of clearing, and under the headings, BRKN, and SCTD, the time at which the clouds first became broken and scattered respectively. While the results are by no means perfect, broken or scattered clouds were reported within 1 hour of the indicated clearing time in approximately 80 percent of the cases, and in all cases within 1½ hours of the indicated clearing time. We therefore believe these results justify the use of this method of forecasting the clearing of California summertime stratus clouds.

TABLE 1

Date	t_c	BRKN	SCTD
	a. m.	a. m.	a. m.
May 11	7:20	----------	8:10
May 12	8:10	----------	8:41
May 13	8:00	8:41	8:45
May 14	8:30	9:15	9:41
May 16	None	----------	----------
June 2	8:40	----------	7:29
June 3	8:35	----------	8:25
June 6	8:35	9:00	9:10
June 7	10:55	11:29	11:34
June 15	8:35	9:00	9:04
June 16	8:30	----------	9:55
June 17	10:40	11:00	11:10
June 23	8:00	8:29	8:41
June 24	8:30	9:41	9:50
June 25	9:00	----------	9:09
June 27	7:30	----------	8:06
June 28	10:10	8:15	9:50
June 30	11:40	----------	12:55

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By AMY P. LESHER

(This section will be resumed in the March issue—Editor.)

SOLAR OBSERVATIONS

[Meteorological Research Division, EDGAR W. WOOLARD in charge]

SOLAR RADIATION OBSERVATIONS, OCTOBER 1939

By IRVING F. HAND

Measurements of solar radiant energy received at the surface of the earth are made at nine stations maintained by the Weather Bureau, and at ten cooperating stations maintained by other institutions. The intensity of the total radiation from sun and sky on a horizontal surface is continuously recorded (from sunrise to sunset) at all these stations by self-registering instruments; pyrheliometric measurements of the intensity of direct solar radiation at normal incidence are made at frequent intervals on clear days at three Weather Bureau stations (Washington, D. C., Madison, Wis., Lincoln, Nebr.) and at the Blue Hill Observatory at Harvard University. Occasional observations of sky polarization are taken at the Weather Bureau stations at Washington and Madison.